UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,475	03/24/2004	Michael Hansen	HK-0795	1760

24131 7590 03/17/2010

LERNER GREENBERG STEMER LLP
P O BOX 2480
HOLLYWOOD, FL 33022-2480

EXAMINER	
PARK, SOO JIN	
ART UNIT	PAPER NUMBER
2624	
MAIL DATE	DELIVERY MODE
03/17/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/811,475	HANSEN ET AL.	
	Examiner	Art Unit	
	SOO JIN PARK	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-14 and 17-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-14 and 17-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

In response to the amendment filed on 12/17/2009, all amendments are entered and the action follows:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honma (USPN 6,002,845) in view of Gindele (USPN 6,907,144).

Regarding **claim 1**, Honma discloses:

quantizing the binary image data with n bits, wherein n>1 (see column 5 lines 43-47, quantizing one-bit image data into 8-bit image data);

filtering the quantized image data with a low-pass filter having a filter window smaller than a screen cell (see column 5 lines 43-54, averaging only nearby pixels to convert the 8-bit image data into a smooth image); and

obtaining corrected quantized image data from the filtered image data with a threshold value operation (see column 5 lines 54-57, using LUT to adjust the smooth image).

Honma fails to disclose:

providing the low-pass filter with an asymmetrical distribution of filter coefficients with respect to the filter window; and

obtaining the asymmetrical distribution of the filter coefficients from a symmetrical filter by shifting a filter function by fractions of an image point, said fractions being less than 1, and obtaining further coefficients for the asymmetrical distribution by using the same filter function as used for obtaining symmetrical distributions.

In a similar field of endeavor, Gindele teaches:

providing the low-pass filter with an asymmetrical distribution of filter coefficients with respect to the filter window (see column 6 line 35 through column 7 line 5, column 8 line 63 through column 9 line 2, and figures 8 and 10, an averaging filter with an asymmetrical distribution of filter coefficients with respect to a region 16); and

obtaining the asymmetrical distribution of the filter coefficients from a symmetrical filter by shifting a filter function by fractions of an image point, said fractions being less than 1, and obtaining further coefficients for the asymmetrical distribution by using the same filter function as used for obtaining symmetrical distributions (see figures 8 and 10, wherein the asymmetrical filter shown in figure 10 has the same pattern of angles for coefficients and is a shifted version of a symmetrical filter in figure 8, wherein such shifting is a fraction of a region 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Honma with Gindele, which is in a similar field of endeavor of low-pass filtering an image, and provide an asymmetrical low-pass filter having coefficients in a pattern of a shifted symmetric filter, as taught by Gindele, for the

purpose of reducing computation time for noise reduction (see Gindele column 3 lines 46-56), and forming a somewhat random pattern of pixels that still meet the requirement of a sparsely sampled array (see Gindele column 9 lines 9-13).

Regarding **claim 5**, Honma and Gindele disclose everything claimed as applied above (see claim 1).

Regarding **claim 14**, Honma and Gindele disclose everything claimed as applied above (see claim 1), however, Honma and Gindele fail to explicitly disclose:

the quantized binary image data forms a plateau having vertical flanks; and

in the three dimensional representation, the slopes of the vertical flanks are reduced by the filtering.

Honma suggests: the quantized binary image data forms a plateau having vertical flanks; and in the three dimensional representation, the slopes of the vertical flanks are reduced by the filtering (see figure 6, such one-bit image data and smooth image are of 2D).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to represent a 2D image in 3D (the first two dimensions corresponding to rows and columns of a 2D image and the pixel values being a third dimension), and also recognize that adjacent pixels with the same pixel values form a vertical flank, for the purpose of providing a convenient visual representation to a user.

Claims 6-11 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honma and Gindele in view of Sanger (USPN 6,717,601).

Regarding **claims 6 and 17**, Honma and Gindele disclose everything claimed as applied above (see claims (1 and 14), however, Honma and Gindele fail to disclose carrying out the threshold value operation with a threshold value selected as a function of the local gray value and of the desired correction magnitude.

In a similar field of endeavor, Sanger teaches carrying out the threshold value operation with a threshold value selected as a function of the local gray value and of the desired correction magnitude (see column 9 line 51 through column 10 line 9, threshold values are selected as a function of local average gray value and of the desired dot gain).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Honma and Gindele with Sanger, which is in a similar field of endeavor of descreening a binary image (see Sanger column 6 lines 13-15), and select threshold values as a function of the local gray value and of the desired correction magnitude, as taught by Sanger, for the purpose of optimizing the process of adding dot-gain while maintaining dot fidelity (see Sanger column 5 lines 56-61).

Regarding **claims 7 and 18**, Sanger further teaches storing threshold values in a threshold value table (see column 9 line 51 through column 10 line 9, a table of threshold is computed).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made store threshold values in a threshold value table, as taught by Sanger, for the purpose of optimizing the process of adding dot-gain while maintaining dot fidelity (see Sanger column 5 lines 56-61).

Regarding **claim 8**, Honma, Gindele, and Sanger disclose everything claimed as applied above (see claims 6 and 7).

Regarding claims **9, 10, 11, 19, and 20**, Sanger further teaches determining a threshold value function T1=f1(G,dG) empirically based upon model screen dots and obtaining a threshold value function T2=f2(G,dG) therefrom with approximation functions (see column 9 line 51 through column 10 line 9, a function is determined relating threshold, G, and dG based on model screen dots and obtaining intermediate threshold function value points by estimation, wherein G is the input gray value and dG is dot-gain which is desired amount of correction).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine a threshold value function based on model screen dots and estimate another threshold value function, as taught by Sanger, for the purpose of adjusting binary bitmap files to make proof and print appear the same (see Sanger column 6 lines 33-36).

Claims 12, 13, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honma and Gindele in view of Loce et al (USPN 7,079,289).

Regarding **claim 12**, Honma and Gindele disclose everything claimed as applied above (see claim 1), however, Honma and Gindele fail to disclose obtaining corrected binary image data from the corrected quantized image data by quantization with 1 bit.

In a similar field of endeavor, Loce teaches obtaining corrected binary image data from the corrected quantized image data by quantization with 1 bit (see column 6

lines 35-43, printing a thresholded binary image data by 2 quantization tonal levels, i.e. black and white, therefore applying quantization with 1 bit).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Honma and Gindele with Loce, which is in a similar field of endeavor of printing binary halftone images (see Loce column 1 lines 8-10), and quantize a grayscale image with 1 bit i.e. 2 tonal levels of black and white, as taught by Loce, for the purpose of printing.

Regarding **claims 13 and 21**, Honma, Gindele, and Loce disclose everything claimed as applied above (see claims 1, 12, and 14).

Response to Arguments

Applicant's arguments regarding claims 1, 5-14, and 17-21 have been fully considered but they are not persuasive.

Regarding **claims 1, 5, and 14**, Applicant argues that Honma and Gindele fail to disclose the subject matter of the claims specifically because:

a) Applicant's invention is suitable for exposure linearization of recording devices and Honma and Gindele's are not. The Examiner respectfully disagrees. Such limitation is not introduced in Applicant's claims.

b) Honma converts the multi-value density data into 1-bit data before smoothing and therefore has nothing to do with a grey value correction of binary image data. The Examiner respectfully disagrees. Honma's smoothing unit 305 in figure 3 converts a 1-bit data to an 8-bit data and change the image data to values of 0 and 255. It is a binary

image, however, is still quantized by 8 bits. The Examiner further points out that column 4 lines 60-67 that the Applicant quoted only refers to the binarization unit 302 in figure 3. Since the output of the smoothing unit 305 is not inputted back into the binarization unit 302, the 8-bit data is not converted back into 1-bit data. Furthermore, this 8-bit data composed of values 0 and 255 is smoothed to represent multi-values, such as values in between 0 and 255, see Honma column 5 lines 50-54, therefore is a grey value correction of binary image data.

c) Gindele renders the device of Honma inoperative and is related to noise reduction not grey value correction. The Examiner respectfully disagrees. Both Honma and Gindele both disclose replacing a pixel value according to an average value calculated based on nearby pixels (see Honma column 5 lines 50-54 and Gindele column 3 lines 39-45).

d) Gindele discloses a distribution of pixel regions and not a distribution of filter coefficients. The Examiner respectfully disagrees. Gindele gives weights to pixels in selected pixel regions, and the weights are considered filter coefficients.

e) Gindele's filter is shifted by 1 whole pixel instead of less than 1 whole pixel. The Examiner respectfully disagrees. Applicant's claims only introduce an image point not a pixel. The region 16 of Gindele is considered an image point.

In view of the above reasons, claims 1, 5, and 14 remain rejected.

Claims 6-13 and 17-21 are dependent on claims 1, 5, and 14 and are rejected as stated above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOO JIN PARK whose telephone number is 571-270-3569. The examiner can normally be reached on Monday - Friday 9:00 - 5:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on 571-272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vu Le/
Supervisory Patent Examiner, Art Unit 2624

SOO JIN PARK
SJP
Examiner
Art Unit 2624